FRPA Landslide Issues Implementation Group
August 23, 2011 - Web conference to Juneau, Ketchikan, and Klawock, AK
MINUTES – MEETING #2

Present: Marty Freeman, Bob Girt, Kevin Hanley, Kyle Moselle, Pat Palkovic, Paul Slenkamp, Greg Staunton, Mark Vinsel, and Ron Wolfe were present in Ketchikan.
Absent: Mary Edenshaw, Mark Kaelke, Karl Hagerman, Bill Rotecki, Bert Burkhart

Minutes. The minutes from the August 9, 2011 meeting were reviewed and approved.

Review of Science & Technical Committee recommendations.

C2 and C3am (unstable slope terms and definitions): The Implementation Group (IG) discussed how the various terms related to unstable slopes and slide-prone areas are used, whether a consistent term is needed, recommend definitions, and where the definitions should reside.

Freeman noted that the definition of "unstable slope or slide-prone area" does not mean that in a DPO or the other BMPs, each individual criteria would be mapped or addressed. The operator would map areas that are judged to be unstable or slide-prone after considering the combination of slope and the other indicators, not the individual criteria such as areas of jack-strawed trees.

Wolfe reviewed input from the Sealaska attorney on use of the term "area" and proposed definitions for "slide-prone area" and "unstable slope" *(see handouts)*. Wolfe asserted that "unstable slope" and "slide-prone area" are separate terms in the FRPA regulations and should have separate definitions. "Area" is a vague and broadly inclusive term. He proposed definitions built off the S&TC definitions. His proposal added "predominantly greater than 50%" for the slope gradient in both terms, and required that the five indicators be "prevalent" in the definition for "slide-prone area." He recommended that the definitions be included in the fieldbook on "Implementing BMPs for Timber Harvest Operations" (the "purple book").

Moselle said that the definitions for other important terms are in the regulations, and recommended that the definitions for these terms also be in regulation. Wolfe responded that the IG can consider broader options than the regulations, and suggested that if the definitions are included in the regulations that additional definitions might be needed for terms in the proposed definitions. Hanley agreed that the definitions should be in regulation, and noted that the regulations already use these terms. He said Wolfe's solution for separating the terms could work. If "area" is the problem, Hanley suggested using the term "unstable or slide-prone slope" instead. Staunton said that there is good reason to keep the term "area" – it is necessary to look at a broader scale than "slope". Operators and agencies need to be aware of landslide initiation zones and runouts as well as just the slope itself.

Wolfe raised concern that changing "area" to "slope" might create an impression of weakening the regulations. There could be a political downside to that, but he's willing to do it if it improves the regulations. It's appropriate to show slide-prone areas on DPOs. That is consistent with identifying areas we need to look at in more detail. However, where specific practices such as end-hauling and full-bench construction are required in the regulations, he is not comfortable

using "slide-prone area." We could include the indicators in the definition of "unstable slope" and just use that term. Girt said that from the working aspect, eliminating "slide-prone area" is an improvement, and you could use "unstable or slide-prone slope."

Hanley said that the nature of slides is such that you don't know the whole area that could be affected by a slide – it is highly variable.

Moselle said that Wolfe assumes that the regulation drafters meant something different by each of the "unstable" terms; the S&TC didn't assume that and couldn't figure out different definitions for them. Moselle suggested putting a concise definition in the regulation and then put the indicators in the purple book. We could put sideboards on "area."

Palkovic said that changing "area" to "slope" wouldn't change the actual practice on the ground for the three places in the regulations where the term "unstable slope or slide-prone area" is used. Staunton said that the main change from replacing "area" with "slope" would be in the regulations on the detailed plan of operations (DPO), not in the BMPs on specific field practices.

Wolfe said an example of the effect of the terms could be a Sealaska project with mass wasting and hydrology consultant Dale McGreer in a sensitive area. Sealaska Timber Corporation identified the area on a map, for Dale to conduct a detailed field review to identify on the ground specific places of concern. He said that operators would show "areas" of potential concern in a circle on the DPO maps – that allows some appropriate vagueness at the DPO stage.

Hanley said that he understands "slide-prone slope" to mean that there is evidence of past sliding, that there is a demonstrated tendency to slide. On an "unstable slope" there is no apparent evidence of past slides, but there are other indicators of instability.

Moselle asked whether an "unstable slope" is a slope with "unstable soils" based on the soil definition. Freeman said no, not all unstable slopes have soils with the characteristics in the "unstable fill material" definition.

Vinsel noted that the 1990 report by Hartsog in the bibliography refers to roads on slopes up to 90% gradient – does that still happen? Staunton said that it occurs, but only rarely because of the cost of road construction on such steep slopes. A road might cross a short stretch of ground that steep.

Staunton said that under 11 AAC 95.290(b)(3) (excavation and blasting) that if a site is not on an unstable slope, but below it or adjacent and above it, operators should consider the "area" for blasting in saturated conditions. He advocated keeping "unstable slope or slide-prone area" together in the definition. Wolfe said that the S&TC recommendations combined two terms into a single definition. Staunton agreed with that concept. The terms mean different things but can be put together – you can define them collectively.

Vinsel said that the geotechnical relation to the slide-prone slope is what requires consideration. He agreed that "area" needs to be tightened.

Wolfe said that it is good to consider a regulation clean-up as long as we can demonstrate that it strengthens or improves them.

Wolfe suggested that a "slide-prone area" should be delineated on the DPO as a trigger to a closer look. There was general agreement on this point. Palkovic said that the DPO process already essential identifies general areas. Wolfe further suggested that the regulations with specific BMPs (e.g., 11 AAC 95.290 – road construction) require specific actions, and the IG should find definitions that are consistent with that.

Staunton suggested using "topography exhibiting a gradient" rather than "slope" or "area" because "topography" pertains to a set piece of ground. Hanley said the definition could refer to geomorphology such as alluvial fans where you don't want to put a road.

Wolfe reiterated his concern with continuing to use "unstable slope or slide-prone area" as a single term. Staunton said that "or" creates a different link in the term than "and" would.

Moselle suggested providing a general definition for "slope" (e.g., land with a gradient) and "area" to narrow the terms. Staunton said that "topography" can include both a broad area or a narrower zone. Hanley observed that on the ground "slope" and "area" are used consistently and there haven't been problems.

Moselle commented that on Mitkof island, the Mental Health Trust has been looking at parts of the hillside more discretely than the Mitkof homeowners. He said that FRPA doesn't grant a permit or prohibit activities, but it guides actions to be responsible. Wolfe responded that Mitkof is a unique situation that has forced consideration of global fixes.

Palkovic commented that FRPA includes other vague terms, but it relies on knowledgeable people in the field. Wolfe agreed that the success of FRPA depends on field work.

Moselle emphasized that one of the driving factors for the S&TC in developing the indicators in their proposed definition was to equip operators with information to help recognize potential hazards in the field.

Freeman summarized the points of agreement:

- The DPO requires a broad look at areas of concern. At this stage some vagueness is beneficial. "Area" is an appropriate term at this stage of operations.
- A more specific, consistent term is appropriate in the BMPs that require specific actions on the ground.

Palkovic asked about whether we could provide tools for identifying all areas susceptible to slope failure or instability rather than a definition. She noted that the purple book doesn't include all BMPs, just those that are part of the compliance monitoring program. Staunton agreed that developing the tool for identifying hazards is the intent of the S&TC process. Freeman also noted that the process to develop or revise the purple book has been primarily an internal DNR process, not a public or Board-driven process. Wolfe said that made it easier to change the purple book if needed.

Moselle noted that training on the indicators will be part of the training recommendations, too. Moselle reiterated that the regulations could include a short definition of "unstable slope or slide-prone area," and then the indicators could be included in the purple book. A possible definition could be, "a hillside with a tendency to mass wasting." Wolfe said that this consistent with the approach in other regulations.

The group tentatively agreed to drafting a short regulatory definition for "unstable slope" for the specific BMPs and using "unstable area" with the indicators in the DPO regulations.

Slenkamp said that the purple book was created for operators to explain how the compliance monitoring score sheet is used. It doesn't carry much clout. Palkovic agreed. Staunton said that it is also used in training.

Wolfe said that he is looking for a place that the information in the indicators can reside that helps the operators and agencies. Slenkamp agreed. He suggested putting it in the purple book and using the book in training on this issue. If the indicators prove useful after some field experience then they could be added to the regulations.

Girt commented that he didn't recall incidents of conflicts over identifying unstable areas.

Palkovic hesitated to use the purple book for this purpose – the green book (the regulations) has been the real reference.

Moselle suggested putting the indicators in 11 AAC 95.220 (DPOs) with "should consider" language. Wolfe said that he is less comfortable having the indicators in the green book, and prefers using the purple book. Palkovic said that the "should consider" language is out of place. Girt noted that the Group already included "should consider" in **C6**.

Palkovic asked what would happen if a slope <50% gradient has unstable characteristics. Wolfe said that FRPA allows discretion in the field. DOF could use a directive or stop work order if they believe a slope is unstable.

Palkovic said that operators do ask what constitutes an unstable or slide-prone area. Vinsel stated that having the indicators in the DPO regulations for the purpose of triggering a site visit is appropriate.

Freeman reiterated that the S&TC wanted to provide guidance for identifying unstable slopes in the field, and that they recognized that "slopes >67%" don't cover all unstable slopes.

Wolfe remained concerned that including the indicators in the regulations could be a factor in future litigation over landslides.

Staunton said that dropping "area" from 11 AAC 95.290 raises concerns about causing instability.

Moselle noted that landslide initiation zones often occur in forested land rather than in the actual clearcuts. Hanley asked how the regulations would apply if an initiation zone is outside the cutting unit. Freeman noted that the introductory language to 11 AAC 95.220(9) specifies that the required information is for areas that are "located in cutting units or traversed by roads." She suggested that "landslide scar" would include the initation zone.

Slenkamp reiterated that the intent is to identify factors that lead to taking a second look at an area of concern.

Palkovic asked about the use of "susceptible to mass wasting" in a proposed definition for "unstable slope." All slopes could be "susceptible." Freeman said that the intent is to find a term higher on the scale of likelihood. Hanley said that the test goes back to the definition of "mass wasting" which refers to "significant masses of earth." Girt suggested other adjectives such as "sensitive," "liable," or "prone." Wolfe suggested "inclined to" or "having a tendency to." Freeman briefly reviewed the S&TC discussion on "significant" and "likely." These terms are used widely in FRPA and the regulations and the S&TC decided that the standard dictionary definitions were appropriate to cover the diverse ways they are used.

The group agreed that the definition should include both sites with evidence of past landslides and those with slide potential based on a combination of the site factors. They agreed to use "exhibiting mass wasting or where mass wasting is likely to occur."

Freeman asked whether the Group thought the indicators should be included in the purple book. Moselle said that the purple book assesses what you do on the ground. Palkovic said that the purple book is how DOF rates how well a BMP has been implemented. The Act and regulations are the actual standards. Wolfe added that the purple book is also guidance for what the agencies meant by the regulations. It's OK to look to the purple book for additional clarification or explanation. Palkovic countered that explanations area usually in the green book. Hanley agreed.

Moselle said that that for example the proposed changes to 11 AAC 95.360(c) would add a new BMP. Part of the follow-through would be including the new BMP in the purple book, and notes in the purple book could provide the indicators as background information. Palkovic noted that the purple book currently includes only .360(c)(1)-(3). Moselle recommended adding guidance for the new BMP in the purple book. Vinsel asked whether the IG could recommend adding guidance for .360(c)(5) and (6) to the purple book also. Freeman said yes, but should check first on why they were not originally included.

Staunton and Moselle said that the indicators are needed for DPO preparation and harvest and road planning, but are less important when implementing specific BMPs in the field – at that point the discussions between operators and agency staff are key.

Slenkamp and Girt commented that FRPA works well. There have not been serious issues over this question. Hanley said that it is still helpful to have a sentence referencing the indicators for cable yarding and landing BMPs. Palkovic would still like to have the indicators in the definition in regulation.

Staunton said that at the DPO stage, DOF wants to find out about potential problems from the operator and we should provide them the indicators. Then if there are concerns, the agencies do a field visit with professional foresters and biologists and the operator and assess whether there is a slide-prone area. If the forester thinks it's slide-prone, the operator can disagree and they can discuss it. The forester can assert his position in a directive, and the operator can appeal. We can let the process run its course – the questions are in the arena of judgment at that point. It allows the professional to make the decision.

Palkovic emphasized that FRPA is not a permit, and it puts the primary responsibility of the operator, for example in stream identification, BMP implementation, and unstable slope identification. On other standards, we are upfront about what's expected and put it in the regulations. The DPO review is a safety net. Sometimes inspections aren't warranted. Sometimes issues may arise in the field that weren't identified ahead of time. Operators have the responsibility to think when they're out there.

Slenkamp commented that the issues are protection of water quality and fish habitat. In the photo [shared by Palkovic] of a slide near Natzuhini, there weren't impacts to fish habitat. We need to allow flexibility to respond to ground conditions, like a patch of blue clay. Operators have to address these conditions even if they didn't identify them ahead of time in the DPO.

Hanley said that it comes down to the amount and quality of information provided in a DPO. The agencies might not go out for a field inspection if there isn't a red flag in the DPO. Sealaska's DPO have 5-meter contours, which is abnormally good. Other DPO maps are often deficient. This relates to training needs for DPO preparation.

Slenkamp stated that operators usually monitor operators to make sure they operate in their own and the landowner's best interest. Operators may have to be told to do certain practices, e.g., end-hauling. If reviewers use good topographic maps they can come up with the same level of information that Sealaska has.

Hanley stated that he would like to reference the indicators in the definition of "unstable area" in 11 AAC 95.200(a)(9)(A). He wants to get that information out to operators so that they are considered, for example, the side-rod on-site should know them.

The IG agreed to include the indicators in the definition of "unstable area" in 11 AAC 95.220(a)(9)(A) and in training needs. Palkovic said that it's important to include them in the regulations, if they aren't unintended changes could happen like in a kid's game of telephone. Putting them in the regulations keeps the information stable.

Staunton said that a trained operator will recognize an uncomfortable situation in the field. Leading him to evaluate the indicators won't gain much with a shovel operator if he's not told to use them by the person submitting the DPO. It's different for the indicators of saturated soil conditions. The instability indicators (e.g., a high-density of zero-order basins) may or may not be seen by a shovel operator in the field. Wolfe said that there's always a challenge getting information to operators on the ground. The engineer will flag in the road route, not the shovel

operator.

Girt asked about other avenues to get this information out. It's important. Wolfe recounted that prior to 1998 the DOF had a small green field manual that largely became obsolete when the regulations were adopted in 1993. Options to disseminate information on the indicators could include the purple book, the regulations, or a new field manual. Slenkamp said that the purple book is well-received by the operators, along with training. It would be good to put more emphasis on training. Wolfe agreed that the engineers use the purple book. He added that in the past DOF had held training workshops that were well-attended. Staunton said that DOF still provides agency and operator training. They do it annually with Sealaska.

Slenkamp stated that the industry should make sure their people on the ground are familiar with FRPA. The industry is so small the key field people are usually familiar with the Act but an annual refresher is useful.

Palkovic said that that beyond the formal training presented by Staunton, there is also impromptu training that occurs during field inspections, etc. Wolfe said that on-the-ground interaction is irreplaceable, but it glad to hear that periodic training sessions are also available. A 3-day session would be a huge commitment for operators, but a 1-day session in Ketchikan or on Prince of Wales Island is doable. It's hard to find dates that work for everyone, so be sure to get dates out well in advance.

S&TC C2. Change the terms "unstable slope" and "unstable or slide-prone slope" to "unstable slope or slide-prone area" wherever they appear in the regulations. [Note: this amends the term used in 11 AAC 95.220(a)(9)(A) and .290(d)(2).]

IGC C7. Use the term "unstable area" with regard to the DPO, and use the term "unstable slope" in the other BMPs requiring specific actions. (See definitions in IGC C8)

C3am. "Unstable slope or slide-prone area" means a slope or area, generally in excess of 50% gradient, where one or more of the following indicators may exist. Slide risk depends on the combination of factors at a given site.

- landslide scar initiation zones,
- jack-strawed trees,
- gullied or dissected slopes,
- a high-density of streams or zero-order basins (source basins for headwater streams), or
- evidence of soil creep.

The S&TC recognizes that slope dissection is a significant indicator of slide risk, but difficult to assess – closely spaced dissections are a red flag, as are few dissections that funnel to a common collecting area. The S&TC recommends that the procedures in Chatwin, et al., 1994 be referenced in assessing landslide risk. One rule of thumb for assessing frequency of dissection would be where dissections are so closely spaced that they preclude split-yarding. This distance is approximately equal to tree height.

The citation for Chatwin et al., 1994 is:

Chatwin, S. C., D. E. Howes, J. W. Schwab, and D. N. Swanston. 1994. A guide for management of landslide-prone terrain in the Pacific Northwest. 2nd ed. British Columbia Ministry of Forests and U.S. Forest Service. 218 pp.

IGC C8 Subject to review of the whole package of recommendations at the next meeting and a final determination of where the indicators should reside with regard to the specific BMPs, the group agreed to the following terms and uses to replace "unstable slope or slide-prone area."

Revise 11 AAC 95.220 (a)(9)(A) as follows:

"(9) the following slope information for areas that are located in cutting units or traversed by roads:

(A) any known unstable [OR SLIDE-PRONE SLOPE] area. For the purposes of identifying unstable areas under this section, consider sites with slopes generally in excess of 50% gradient, where one or more of the following indicators may exist.

- landslide scars,
- jack-strawed trees,
- gullied or dissected slopes,
- a high-density of streams or zero-order basins (source basins for headwater streams), or
- evidence of soil creep."

For the regulations that require specific actions in BMPs (11 AAC 95.290, .340, .345, and .360) use the term "unstable slope" and add a definition to the regulations :

"Unstable slope" means a slope exhibiting mass wasting or where mass wasting is likely to occur.

"Mass wasting" is already defined in the regulations as "the slow to rapid downslope movement of significant masses of earth material of varying water content, primarily under the force of gravity."

NOTE: There was **not consensus** on whether or not to include the indicators in definitions of "unstable slope" or "unstable area" in the regulations with specific BMPs. The group did agree that it would be all right to include the indicators in the purple book.

Palkovic described how the DOF compliance monitoring program evolved. It began with Bruce Johnson doing all compliance monitoring, then was expanded to all the FRPA foresters, and a checklist was developed for selected BMPs to monitor. Finally the purple book was developed for training monitors and operators. Girt commented that 11 AAC 95.830 says that the Board, agencies, and industry will all participate in review of FRPA effectiveness.

Staunton noted that there are already similar indicators included for other BMPs in the purple book. It's not a problem to add these indicators to the purple book.

Hanley noted that alluvial fans are also inherently unstable, especially with regard to a road undercutting a toe-slope. Wolfe asked why alluvial fans weren't included in the S&TC recommendations and suggested that they may not be in steep areas and the S&TC focus was on landslides. In the DPO context, it may be reasonable to add consideration of alluvial fans. Slenkamp stated that alluvial fans are typically on flat ground, in the depositional area. They aren't relevant to landslide issues, but they present other stability issues. Hanley agreed that they are more relevant to road construction. Girt said that he thins of alluvial fans as a site where something unstable has stabilized. They have different issues like creeks that move over time. Their slopes are usually <10%.

The IG agreed not to include alluvial fans in the indicators for unstable slopes.

S&TC C5am/IGC3 (unstable fill material): Pat Palkovic reported that she concurred with the IG's consensus on S&TC C5am after review. Use of "unstable slope" is consistent with the prior discussion of terms.

S&TC C5am. Add the following term to the definitions in 11 AAC 95.950: **"Unstable fill material"** means organic debris, organic soil, or fine-textured mineral soils. A fine-textured soil has a texture of silty-clay, sandy-clay, or clay.
Change .290(b)(2) as follows:
11 AAC 95.290. Road construction. […]
"(b) If constructing a road on a slope greater than 67 percent, on an unstable slope, or in a slide-prone area is necessary, an operator […]

(2) shall balance cuts and fills so that as much of the excavated material as is feasible is deposited in the roadway fill section; however, unstable fill material may not[1] be used [IF IT IS UNSTABLE, FINE TEXTURED, OR PRONE TO MASS WASTING] and cuts must be minimized where fine textured soils are known or encountered; "

IGC3am. The Implementation Group concurs with S&TC C5am with the deletion of "slide-prone area":

11 AAC 95.290. Road construction. […]
(b) If constructing a road on a slope greater than 67 percent[,] or on an unstable slope [, OR IN A SLIDE-PRONE AREA] is necessary, an operator […]
(2) shall balance cuts and fills so that as much of the excavated material as is feasible is deposited in the roadway fill section; however, unstable fill material may not be used [IF IT IS UNSTABLE, FINE TEXTURED, OR PRONE TO MASS WASTING] and cuts must be minimized where fine textured soils are known or encountered;

S&TC C6 (cable yarding): Vinsel asked whether cable-yarding creates a lot of vibration. Moselle said no, but there butt-strikes can occur with partial suspension. Slenkamp elaborated that partial suspension really cuts down on impacts on the ground. Vibration is typically not an

issue as long as the leading end of the log is not striking a lot of material. Hanley added that the disturbance is different for uphill and downhill yarding.

The IG agreed to change "unstable slope or slide-prone area" to "unstable slope" in S&TC C6.

S&TC C6.
Add to **11 AAC 95.360 Cable yarding: […]**
(c) The following standards apply to cable yarding operations: […]
(6) on unstable slopes or slide-prone areas, an operator shall minimize disturbance to soils, understory vegetation, stumps, and root systems.

IGC4am. Concur with inserting in **11 AAC 95.360**, but delete "or slide-prone areas."
Add to **11 AAC 95.360 Cable yarding: […]**
(c) The following standards apply to cable yarding operations: […]
(6) on unstable slopes, an operator shall minimize disturbance to soils, understory vegetation, stumps, and root systems.

S&TC C6, cont.
Add to **11 AAC 95.360 or .340:** In these areas, an operator should consider partial cuts, helicopter yarding, retention areas, or other techniques designed to meet these objectives.
IGC5am. Revise as follows and insert in **11 AAC 95.340**, Harvest unit planning and design:
On unstable slopes an operator should consider techniques to minimize disturbance to soils, understory vegetation, stumps, and root systems. Examples of possible techniques include partial cuts, retention areas, and use of helicopter or skyline systems to achieve full suspension of logs.

C7 (tracked and wheeled harvest systems) Determine the appropriate "unstable/slide-prone" term

S&TC C7.

Add to **11 AAC 95.365. Tracked and wheeled harvest systems**: (a) A person may not skid timber or operate construction equipment or machinery in a water body catalogued as anadromous under AS 16.05.871, without written approval of the Department of Fish and Game, or in any other surface waters, marshes, [OR]non-forested muskegs, or unstable slopes or slide-prone areas without prior notice to the division except, that equipment may be operated on frozen surface waters, marshes, or non-forested muskegs without prior notice to the division.

IGC6am. The Implementation Group concurs with the deletion of "or slide-prone area."

Add to **11 AAC 95.365. Tracked and wheeled harvest systems**: (a) A person may not skid timber or operate construction equipment or machinery in a water body catalogued as anadromous under AS 16.05.871, without written approval of the Department of Fish and Game, or in any other surface waters, marshes, [OR]non-forested muskegs, or unstable slopes without prior notice to the division except, that equipment may be operated on frozen surface waters,

marshes, or non-forested muskegs without prior notice to the division.

C8 (blasting and excavation). Freeman explained that the S&TC recommended that the BMP be amended by deleting the modifying phrase as follows:

> "(b) If constructing a road on a slope greater than 67 percent, on an unstable slope, or in a slide-prone area is necessary, an operator […]
>
> (3) may not conduct excavation and blasting activities during saturated soil conditions. [IF MASS WASTING IS LIKELY TO RESULT AND CAUSE DEGRADATION OF SURFACE OR STANDING WATER QUALITY.]

The S&TC felt strongly that with the combination of steep or unstable slopes and saturated soils blasting or excavation would probably cause landslides, that the landslides could be large, that the extent of the slide couldn't be predicted reliably, and that impacts to water quality were highly likely under this scenario.

Wolfe said that he understands why the S&TC would recommend removing the phrase, "if mass wasting is likely to result and cause degradation of surface or standing water quality," but it is extremely near and dear to Sealaska's heart. As a practical matter, there will most likely be a link to surface water quality in these situations, but if there isn't, Sealaska wants to be able to go forward. Wolfe doesn't want to decouple FRPA from water quality impacts.

Girt noted that the charge to the S&TC and IG is to consider provisions that impact fish habitat or water quality. Why did the S&TC take the phrase on water quality out? Freeman said that the S&TC believed that the risk of slides under the conditions of steep or unstable slopes, saturated soils, and blasting or excavation that a slide will probably occur, that it has the potential to be large, and it is hard to predict how far it will go. They felt the risk of impacts to water quality was so great that blasting and excavation should not be allowed on these sites during saturated conditions. Vinsel said that if there's a pile of dirt it will end up in fish-bearing waters. Hanley emphasized that under these conditions mass wasting is so likely to occur that these activities should be restricted.

Wolfe reported that Bob Loescher, a member of the group that developed the 1990 FRPA, said that you can only regulate private owners for landslides is if water quality degradation is at stake.

Moselle noted that the current regulation includes impacts to surface and standing water. Freeman added that the definition of "standing water" is a waterbody $\geq$0.5 ac with no outlet.

Slenkamp deferred to the 1990 FRPA process, and noted the lack of issues that have occurred in implementing FPRA. Landowners still want to limit incursions on their rights. If a landowner is negligent, they are still held responsible. He doesn't know if tweaking this regulation would do much.

Hanley gave an example where blasting at South Cholmondeley caused a slide that didn't affect FRPA waters because it went into marine waters. Is it acceptable to allow that if it is preventable? Staunton said that if you initiate a slide in these conditions, you can't guarantee

where it will stop. An operator needs to act conservatively.

Palkovic also noted that landowners are required to reforest harvested areas to the extent feasible, and landslides can affect reforestation. The regulations do allow 10% of the harvest area to be below the reforestation standards. Wolfe said that as a forester, he is aware that a slide will impact the ability to reforest. However, we are talking about private lands and rights. He understands why the committee thinks the words are superfluous.

Moselle asked why the existing regulation doesn't include fish habitat. Freeman and Hanley explained that the DEC water quality standards determine what constitutes "degradation of water quality." It is based on the designated uses of the water, and in Alaska virtually all waters are designated for drinking water, which is the strictest standard. Fish habitat is covered by the strictness of the drinking water designation.

Girt said that if you eliminate the clause "and cause degradation to surface or standing water quality" but leave in the reference to "mass wasting is likely to result," it is linked to the definition of mass wasting which involves "significant masses of earth material." There could still be exceptions where mass wasting wouldn't be "significant."

Palkovic emphasized that the issue isn't that you can't blast, but that you should delay blasting until the soil is not saturated – it's a timing issue, not a prohibition. Vinsel commented that saturated conditions can extend a long time in Southeast. Moselle countered that SE soils also drains quickly, and saturation typically doesn't persist a long time. Slenkamp said that low areas could remain saturated.

Girt stated that the phrase should remain in place – it's what defines "significant." Moselle disagreed. He said the phrase is a modifier, not a definition.

Vinsel described a slide on the Thompson River in British Columbia that blocked a whole river that is wider than Wrangell Narrows. There are risks there to fish and other uses, and it relates back to the Mitkof homeowners' concerns, but it is outside FRPA because it is salt water.

Palkovic said that she understands the private concerns and suggested that other regulations could be used to restrict blasting in these conditions on state and municipal lands.

Staunton tried to think of when as an operator he would want to initiate a slide – he wouldn't want to expose the people or public resources at risk, and you don't know where the runout will stop.

Wolfe reiterated that he understands the discussion as a practical matter, but the premise of jurisdiction on private land is tied to public water resources.

Staunton said that the S&TC concluded that you can't prevent all slides, but given the combination of conditions in this BMP, the stage is set for problems. Moselle said that this BMP is one place where you go a long way toward avoiding slides.

Palkovic emphasized that the restriction in the BMP would be temporary – only during saturated conditions. It just affects timing.

Vinsel asked about the extent of the road-building season. Wolfe said that the industry would like flexibility to build roads year-round, but that's not always practical.

Hanley said that it is unavoidable to think about the public safety issue in this context because blasting under saturated conditions is so likely to result in a slide. The S&TC said that there would be impacts to safety, and the only opportunity to address them is after the fact if a slide occurs.

Moselle noted that fish are protected under either alternative. Hanley countered that we don't know the extent of a slide before it occurs, and it may reach fish habitat. Staunton said that as an area forester, if he could walk to a stream within a mile below a potential slide path and an operator proceeded with blasting or excavation in these conditions, he would write it up as a FRPA violation.

▶ There was not consensus on this issue. The timber industry and private landowner representatives present feel strongly that the regulation should not be changed, that it is an unjustified incursion into private property rights if the connection to degradation of water quality is not maintained. The other representatives present supported the S&TC recommendation because of the high probability of landslides and water quality impacts occurring, and because the change affects timing of blasting and excavation during saturated conditions, but it is not a prohibition.

The IG agreed that this issue should be elevated to the Board of Forestry.

C10 (training needs): The Group generally agreed with the training recommendations. The terms were changed to be consistent with the terms recommended by the IG. Girt noted that he will have comments on the slope stability indicators when the Group addresses S&TC C9. Staunton commented that the regulations don't talk about landslide runout zones, but you need to think ahead about where slides might go.

Girt asked whether training needs are targeted at operators only. Freeman said they also address agency staff and landowners.

S&TC C10.
Training needs include,

- Identification and mapping for DPOs of "unstable areas,"
  - information available from the scoping maps, digital elevation models, and other sources to identify and map these areas
  - identification of slopes <67% that are unstable, including application of the indicators listed under this definition
- Identification of "saturated soils" and understanding of the indicators for saturation on slopes
- Assessment of likely runout zones for potential slides (e.g., see Chatwin et al., 1994

illustrations)
- Connection between FRPA standards and water quality standards, and sources of information on water uses
- Any changes adopted in regulation or made to the DPO form.

IGC9. The IG concurs with the S&TC C10 on training needs with the following changes. Training needs include,
- Identification and mapping for DPOs of "unstable slopes" and "unstable [SLIDE-PRONE] areas,"
  - information available from the scoping maps, digital elevation models, and other sources to identify and map these areas
  - identification of which slopes <67% are unstable, including application of the [ALL] indicators listed under this definition
  - [WHICH SLOPES <67% ARE UNSTABLE OR SLIDE-PRONE]
- Identification of "saturated soils" and understanding of the indicators for saturation on slopes
- Assessment of likely runout zones for potential slides (e.g., see Chatwin et al., 1994 illustrations)
- Connection between FRPA standards and water quality standards, and sources of information on water uses

Any changes adopted in regulation or made to the DPO form.

Next meeting

Tentative dates were set for a half-day (8:30-1:00) video conference on September 27 or 28, 2011. Video conference sites will be available in Juneau and Ketchikan. IG members in other locations are encouraged to join one of those sites, but can connect in for audio and web conferencing from other sites if necessary.

Agenda items

- Review any feedback from the August 30-31 Board of Forestry meeting
- Discuss and develop recommendation for C9 (saturated soil definition)
- Discuss the non-consensus item regarding the BMP in 11 AAC 95.290(d) (end-hauling and
- full-bench construction)
- Final review of C10 (training needs)
- Overview of complete package of IG recommendations

Handouts

- Agenda
- Minutes from meeting #1, August 9, 2011
- Excerpts of regulations using terms involving "unstable"
- Memo from Jon Tillinghast, Atty. to Ron Wolfe re definition of "area" in proposed FRPA regulation changes
- Proposed definitions and application of "slide-prone area" and "unstable slope" from Ron Wolfe

Other attendees
Brian Kleinhenz, Sealaska

TO DO
Freeman:

- Distribute minutes from meeting #1 to public mail list ***done 8/24/11***
- Brief Board of Forestry on Implementation Group process to date ***August 30-31***
- Review draft definition for "unstable slope" with AGO regarding use of "slope" in both the term and the definition ***done 9/21/11***
- Send paper on "significant" and "likely" to S&TC ***done 8/25/11***
- Check on why e.g., .360(5) and (6) were not included in the purple book.
- Send S&TC Water Quality Standards briefing to IG ***done 8/25/11***

All:

- Review the minutes, especially consensus statements.
- Review the S&TC minutes regarding S&TC C8 (blasting and excavation in saturated conditions)
- Review the S&TC minutes on the non-consensus point on 11 AAC 95.290(d)